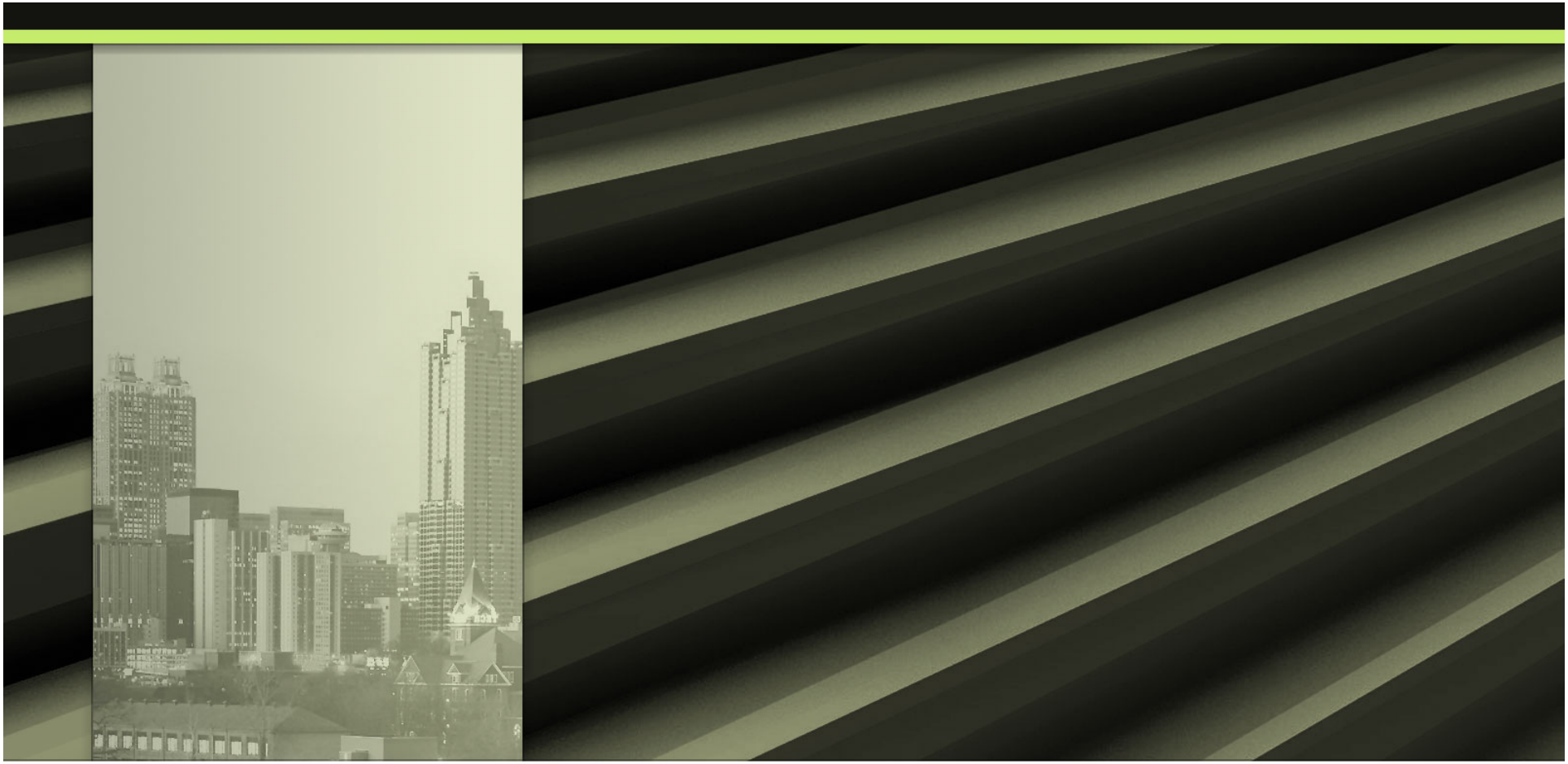

New York City 2014 Building Code Fire Protection Revisions

Presented by John Bower

NYC Building Code History

History

In 1625, the Dutch West India Company established rules for the types and locations of houses that could be built by the colonists of New Amsterdam.

This early attempt at meeting public safety and sanitation needs would evolve into one of the most comprehensive building and zoning codes in the United States.

By 1674, extensive laws governing construction, fire prevention and sanitation were in place.

In 1860, after a tenement fire took 20 lives, New York City's building laws were extensively revised and strengthened. At that time, the position of "Superintendent of Buildings" was created within the Fire Department to enforce the new structural safety laws. An independent "Buildings Department" in Manhattan was later founded in 1892. Each Borough President's office had an autonomous Superintendent of Buildings until 1936, when a citywide Department of Buildings was created.

NYC Building Code History

Fire Disasters often prompted revisions to the building and fire codes.

The Triangle Shirtwaist Fire in 1911 resulted in major changes to the New York State labor Laws including strict egress requirements and upgraded fire escapes.

To eliminate exceeding narrow and steep stairs the 1901 Tenement House Act established dimensions for stair width, treads and risers. This was followed by the 1929 Multiple Dwelling Law which included enhanced egress requirements in newly constructed residential building over 75 feet in height.

The 1916 NYC Building Code required one stairwell for each 2,500 sq. ft.. of floor area in office buildings. The 1938 NYC Building Code introduced a less absolute approach requiring a minimum of two stairwells in office buildings, specifying a travel distance of no more than 150 feet and requiring that the stairwells had to accommodate the egress load of the floor, often resulting in the requirement of additional stairwells.

NYC Building Code History

The 1968 NYC Building Code increased maximum travel distance to 200 feet in unsprinklered office buildings and 300 feet in sprinklered office buildings.

The invention of the first automatic sprinkler system in 1874 provided a groundbreaking tool to protect life and property.

In 1882, as part of a major rewrite of the New York City Building Code, extensive provisions for theaters were enacted, including a requirement that sprinklers be installed making theaters the first buildings in New York City to require automatic sprinklers.

After the Triangle Shirtwaist Factory fire in 1911, sprinklers were required in factories over seven stories or 90 feet in height.

The 1968 Building Code expanded the requirements for automatic sprinkler systems to high hazard storage, mercantile spaces, and showrooms, but most significantly, high-rise office buildings, nightclubs, and residential buildings were exempted. Over the coming decades, tragedies in all three classes of these buildings would force a change.

NYC Building Code History

Local Law 5 of 1973 further expanded the requirements for the installation of sprinkler systems in new high rise office buildings and in existing high rise o office buildings with an alternative for compartmentation.

On December 18, 1975, fire swept through the Blue Angel nightclub on East 54th Street in Manhattan, killing seven. The fire resulted in amendments to the building code, including a strengthening of provisions for places of public assembly, and a requirement that sprinklers be retroactively installed in existing nightclubs.

Residential fires occur in New York City each year, but two back to back tragedies in December 1998 – the first on December 19, which claimed the lives of three firefighters, and a second on December 24, which killed four civilians – galvanized media and public attention, resulting in a law mandating sprinklers in newly constructed residential buildings with four or more units and a retroactive requirement for sprinklers to be installed in similar residential buildings undergoing a gut rehab.

NYC Building Code History

No modern sprinkler system would have been able to contain the massive fires that erupted in the Twin Towers on September 11, 2001. However, following the attack the city, moved to expand the sprinkler requirements of the building code, requiring the installation of sprinklers in existing office buildings over 100 feet in height by 2019.

Overview

Overview

- The 2014 Code will be based on IBC 2009 with modifications
- It emanates from a legally mandated three year revision cycle.

Section 903

Automatic Sprinkler System Requirements

Section 903 of the Building Code contains the “where to” requirements for the installation of Automatic Sprinkler Systems.

Section 90BC Q 102

Automatic Sprinkler Systems Requirements

BC Appendix Section BC Q 102 contains the "how to" requirements for the installation of sprinkler systems and will be based upon NFPA 13 – 2007 with modifications.

Section 90BC Q 103

Automatic Sprinkler Systems Requirements

BC Appendix Section BC Q 103 contains the "how to" requirements for the installation of sprinkler systems in one and two family dwellings and will be based upon NFPA 13D – 2007 with modifications.

Section 90BC Q 104

Automatic Sprinkler Systems Requirements

BC Appendix Section BC Q 104 contains the "how to" requirements for the installation of sprinkler systems in residential occupancies up to and including six floors in height and will be based upon NFPA 13R – 2007 with modifications.

Section 905

Standpipe Systems Requirements

Section 905

Standpipe System Requirements

Section 905 of the Building Code contains the "where to" requirements for the installation of Standpipe Systems.

Section 90BC Q 105

Standpipe Systems Requirements

BC Appendix Section BC Q 105 contains the "how to" requirements for the installation of standpipe systems and will be based upon NFPA 14 – 2007 with modifications.

Highlights

- The code requires Class III Standpipe systems. Class I standpipe systems may be installed in fully sprinklered buildings where a lobby hose storage box is included.
- Class III standpipe systems include large and small hose connections. Class I standpipes do not have the small hose connection.
- Hose & racks not required for Class 1 systems.

Highlights

- BC Q105 - 5.4.1.1 allows Manual-Wet or Automatic-Wet Class I standpipe systems to be installed in fully sprinklered non-high rise buildings.

- Most standpipe systems, as we know them, are Automatic-Wet.

Highlights

- Manual-Wet standpipe systems do not require a pump. The water supply available to them, other than the fire department connection, must be capable of filling the system only and provide an automatic water supply for sprinklers..

Special Inspections

Special Inspections

- Special inspections are required for all sprinkler and standpipe applications approved after 7-1-08.

Special Inspections

Registration

- Special inspection agencies must have been registered with DOB by May 13, 2013.
- Class 1 special inspection agencies were required to have been accredited by May 13, 2013 to maintain registration and to be able to perform special inspections on work permitted after 5-13-13.

Special Inspections

Special Inspection Classes

- Class 1 – Any project
- Class 2 – Any project except: Major Buildings (10 or more stories), Full Building Demolition and Certain alterations and enlargements of major buildings.
- Class 3 – Any work in up to three family dwellings or the alteration, including partial demolition, of less than 10,000 square feet of gross floor area.

Sort of Recent Legislation

Sort of Recent Legislation

Local Law 63

Local Law 63
Enacted 10-7-09

- Requires hydrostatic testing of new and altered standpipe systems as they are erected or demolished.
- For new systems tests will be required at 75 feet and every 100 feet thereafter and at the completion of the work.

LL 63

- In freezing conditions an interim test may be done with dry nitrogen or air per NFPA 14 standards. When weather conditions permit, a hydrostatic test must be performed.
- For enlargements tests must be done for every 75 feet of added height and at the completion of the work.
- For demolitions a test shall be performed at the commencement of the work.

LL 63

- For alterations a test must be performed at the completion of the work.
- Hydrostatic tests must be performed at 300 PSI or 50 PSI above the maximum system pressure for 1 hour.
- Tests must be witnessed by the department or by the special inspector. Self-cert tests are not considered as witnessed by the department.

LL 63

- This local law's effective date was 120 days from 10-7-09.

Local Law 58

Local Law 58
Enacted 9-3-09

- Requires color coded painting of all new and existing standpipe and sprinkler system piping.
- All risers and cross connections of sprinkler and standpipe systems are to be painted red.
- Where piping is required to be listed and labeled painting shall not obscure labels.

LL 58

- Exceptions not requiring painting:

1. Attachments, gauges, valves and operable parts other than valve handles.

2. Horizontal branch lines including sprinkler cross mains and feed mains..

LL 58

- Painting of Valve Hand Wheels is required as follows:

- Combination sprinkler standpipe valves – Yellow
- Standpipe only valves – Red
- Sprinkler only valves - Green

- Systems will not be considered to be in a state of readiness until painted as verified by the special inspector.

LL 58

- The effective date of this local law was 180 days from 9-3-09.
- Existing buildings were to comply within 3 months of the effective date.

LOCAL LAW 60

Local Law 60
Enacted 9-3-09

- Cutting and capping of standpipe and sprinkler systems must be performed by a licensed plumber or fire suppression contractor, as applicable, and who has obtained a permit for that work.

- Standpipe and sprinkler systems shall be maintained to the level up to the floor immediately below the floor being demolished.

LL 60

- The required red painting must be maintained during demolition operations.
- Systems shall be maintained as non-automatic with fire department connections in place.
- Damaged or inoperable sprinkler systems can only be removed upon granting of a variance from the above approved by both the Buildings and Fire Departments.

LL 60

- Generally, the shutdown, for more than 8 hours, or removal of any sprinkler system requires FDNY approval by request for a variance to the provisions of the NYC Fire Code that require the maintaining in service of any fire protection system.

LL 60

- The effective date of this local law was 180 days from 9-3-09.
- The requirements pertaining to the removal of sprinkler systems have been modified and clarified by Buildings Bulletin 2012-009, which will be discussed later.

Local Law 64

Local Law 64
Enacted 10-7-09

- An air pressurized alarm system is required for all dry standpipe systems during construction and demolition.
- Systems must be monitored from the fire department connection to the top of each or any riser.

LL 64

- This work must be performed by a licensed Plumber or Master Fire Suppression Contractor, as applicable, who obtains a permit for the work.
- Maximum supervisory pressure of 25 PSI.
- Local alarm only. Upon loss of air pressure and alarm all work at the site shall cease, except for repair of the standpipe system, until the system is restored.

LL 64

- A manual 2-1/2 inch air release connection piped to the system side of the siamese connection check valve shall be provided adjacent to each siamese connection. This arrangement, with multiple valves if necessary, shall allow full air release in no more than 3 minutes, verifiable by an actual air release test performed at the time of initial installation.

LL 64

- Temporary standpipe systems are required when construction reaches a height of 75 feet.
- The same number of standpipe risers required for the permanent installation are required for the temporary installation.
- Buildings requiring standpipe systems because of area only and that are not 75 feet high do not generally require temporary standpipe systems.

LL 64

- The application will not be signed off until an inspection of the permanent system has been performed and entered into the DOB system and a cap and remove OP-98 is filed.
- The temporary system must not be removed until the permanent system is in service.
- The effective date of this local law was 120 days from 10-7-09.

Sort of Recent Legislation

Each of these pieces of legislation has been formally added to the 2014 Building Code

Buildings Bulletin 010-029

Buildings Bulletin 2010-029

- Confirms that the installation of sprinkler systems in existing buildings constructed to prior codes does not trigger a requirement to upgrade the water supplies to the 2008 (or 20140 code requirements.
- Limits the use of the reduction in size of the sprinkler area of operation allowed for the use of quick response sprinklers in certain existing buildings.
- Clarifies other issues concerning sprinkler and standpipe systems in existing buildings.

Buildings Bulletin 012-009

Buildings Bulletin 2012-009

- Clarifies temporary sprinkler installation and compartmentation requirements for existing buildings undergoing interior alterations.
- Highlights
- Alterations on Unoccupied Floors – The existing system can be removed provided a Temporary Sprinkler loop is provided at the core protecting the paths of egress between all exit stairs and active elevator lobbies.

Buildings Bulletin 012-009

Buildings Bulletin 2012-009

- Alterations on Partially Occupied Floors - The entire floor sprinkler system must remain intact and operational except that sprinkler heads in the area undergoing alterations shall be placed in accordance with NFPA 13 requirements.

- For scopes of work involving five or fewer contiguous floors an FDNY variance is not required. The fire department is to be notified indicating a detailed scope of work, date and time and duration of the disconnection and temporary fire protection measures to be provided.

BC – Q102 –NFPA 13 - 2002
Section 16.2.1.4

BC Q102 – NFPA 13 -2002 & 2007
Sections 16.2.1.4 & 24.2.1.4

- This section allows for the hydrostatic testing of sprinkler system modifications affecting 20 or fewer sprinklers to be performed at system working pressures.
- This does not mean, turn the water on and check for leaks.
- The system has to be pressurized to its working pressure, the gauge reading noted, control valve closed and the pressure held for one hour with no leakage noted.

2014 Building Code

2014 Building Code

- The three year code revision cycle is complete.
- The 2014 code will based on IBC 2009.
- The referenced standards will be the 2007 editions of NFPA 13, 13D, 13R, 14 and 20.

2014 Building Code

2014 Building Code

- Passage of final 2014 Building Code legislation was accomplished in December of 2013.
- The effective date is December 31, 2014

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Highlights

- Highlights of 2014 Code Changes
- LAA Limits will change.

- Category 1 Work – The limit for all sprinkler and standpipe work allowed under an LAA except replacement of sprinkler heads of same size, type and position is increased from $25,000 to $35,000 per building per year

Highlights

- Highlights of 2014 Code Changes

- Category 2 Work – Replacement of sprinkler heads of the same type, size and position will be unlimited.

Highlights

- Highlights of 2014 Code Changes
- Chapter 4 Section BC 403

- BC403.3.1 New requirement for buildings >300 ft.. in height. Such buildings shall be equipped with 2 risers and the sprinkler supply shall alternate between the 2 risers on alternating floors. Sprinklers shall not be supplied from the same riser on adjacent floors.

Highlights

- Highlights of 2014 Code Changes
- Chapter 4 Section BC 403

- BC403.3.1.1 Riser location – sprinkler risers shall be in exit enclosures that are remotely located in accordance with Section 1015.2 (1/2 of the length of the maximum overall diagonal dimension of the building or area served).

Highlights

- Highlights of 2014 Code Changes

- BC901.9 Special Provisions for Prior Code Buildings – additions, alterations, repairs and renovations shall meet the provisions for new construction, unless work is performed in the same manner and arrangement as the existing system and not hazardous and is approved.

Highlights

- Highlights of 2014 Code Changes

- Chapter 9 – BC902 Definitions
- Fire Pump – A pump used exclusively for fire protection.
- Fire Pump, Automatic Standpipe – A fire pump located at or below street level that supplies the lower 300 feet of a standpipe system or combined standpipe system.

Highlights

- Highlights of 2014 Code Changes
- Fire Pump, Foam – A fire pump used to boost water supply pressures for a fire protection system where foam.
- Fire Pump, Limited Service – A fire pump with a motor rating not exceeding 30hp and using a limited service controller.
- Fire Pump, Special Service – A fire pump located above street level and that receives its water supply from a gravity or suction tank.

Highlights

- Highlights of 2014 Code Changes

- Fire Pump, Sprinkler Booster Pump – A fire pump that supplies sprinkler systems only.
- Fire Pump, Water Mist System – A fire pump used to boost water supply pressures in a fire protection system with water mist technology.

Highlights

- Highlights of 2014 Code Changes
- Chapter 9 – BC903 Automatic Sprinkler Systems
- BC903.2 Exception #2 – added the clarification that sprinklers are not permitted in elevator machine rooms.
- BC903.2.2 Group B Ambulatory Facilities – sprinklers shall be installed throughout the facility when either;

Highlights

- Highlights of 2014 Code Changes
- Four or more care recipients are incapable of self--preservation.
- One or more care recipients who are incapable of self--preservation are located at other than the level of exit discharge.
- BC903.2.4.2, #3 – Repair garages (Group F--1) for commercial trucks or buses over 5,000 s.f. requires sprinklers.

Highlights

- Highlights of 2014 Code Changes
- BC903.3.1.1.1 – Exempt locations protected by other means, #3 has been modified to not permit the omission of sprinklers when there is high pressure gas installed in the generator room (>15 psig).

Highlights

- Highlights of 2014 Code Changes
- Section 905 Standpipe Systems
- Exception 1.1 to Section 905.3.1, that allows a Class I standpipe system to be installed in lieu of a Class III system, has been modified to require additional locked hose storage boxes to be located on every 10th floor in addition to the lobby box previously required. The quantity of their contents has been reduced.

Highlights

- Highlights of 2014 Code Changes
- BC905.3.3.2 Covered Mall – Location of hose cabinets.
- Added #4 requires all portions of the tenant spaces within 150 feet of a hose connection.
- BC905.3.4 Stages – Class III hose connections are now required for stages greater than 1,000 sf and occupant load > 1,000.

Highlights

- Highlights of 2014 Code Changes
- BC905.3.4 Stages – Exception to the requirement above was deleted regardless of sprinkler protection.

Highlights

- Highlights of 2014 Code Changes

- Separate Code Sections for Fire Department Connections (Section 912) and Pumps (Section 913) – No significant changes in requirements. Global change in the term “Siamese” to “two way fire department connection”.

Highlights

- Highlights of 2014 Code Changes

Appendices

Highlights

- Highlights of 2014 Code Changes
- Appendix G – Flood Resistant Construction
- Requires certain fire protection equipment to be located above flood levels. Generally, pumps, non-OS&Y control valves, alarm panels, electrically operated switches and compressors.

Highlights

- Highlights of 2014 Code Changes

- NFPA 20 – 2007 - The Standard for Fire Pump Installations will be a referenced standard to the code. It will be BC Q 106.

Highlights

- Highlights of 2014 Code Changes

- BC Q102 – 9.2.1.3.3.1 – Clarification that Flexible Sprinkler Drop connections must be rigidly fixed to the building structure at the sprinkler end of the hose, independent of the ceiling suspension system, in accordance with Appendix R of the NYC Building Code.

Highlights

- Highlights of 2014 Code Changes

- BC Q102 – 11.1.4.2 - Clarification of hydraulic calculation requirements with regard to inclusion of hose stream allowances and explicitly stating that balancing the hydraulically calculated system demand to gravity tank available pressures is not required.

Highlights

- Highlights of 2014 Code Changes

- BC Q 102 - Added Section - **11.2.3.2.3.4** Reductions in the size of the calculated area of operation shall not be taken for the use of quick response sprinklers in the design of systems in existing buildings employing fixed duration stored water supplies of less than 5,000 gallons.

Highlights

- Highlights of 2014 Code Changes
- BCQ102--23.1.1 – Water Supplies -- New requirement that Group A-1 occupancy buildings with stages >1,000 ft. or height >40 ft.. require two automatic water sources.
- BCQ102--24.2.1.1, 24.2.1.5 & 24.2.1.10 – Formally revised the testing procedures for sprinkler systems to 200 psig or 50 PSI above maximum whichever is higher for 1 hour.

Highlights

- Highlights of 2014 Code Changes
- BCQ105-9.1.5(2)(f) – (Local Law 100--2013) clarifies the requirement that all fire pumps shall be located within a 2 hour rated enclosure.
- BCQ105-9.4 – Minimum water supply for Group R-2 Occupancies. This revision clarifies that for R-2 buildings the water supply shall be 500 gpm and shall comply with Section 7.9.4 (primary/auxiliary).

Highlights

- Highlights of 2014 Code Changes
- BCQ105--11.4.1 -- Formally revised the testing procedures for standpipe systems to 300 psig or 50 psig above the maximum pressure whichever is higher for 1 hour.

Highlights

- Highlights of 2014 Code Changes

- BC Q 106 – NFPA 20 – Pump Testing Requirements

- NFPA 20 requires that pumps be tested at shutoff, their rating and at 150 % of their rating.

Highlights

- Highlights of 2014 Code Changes

- If 150 % of the pump's rated flow cannot be achieved from the pump's available suction water supply, the pump is to be tested at the maximum flow possible with such water supply.

Highlights

- Highlights of 2014 Code Changes

- Given the increased size of pumps now required, such as 750 and 1,000 GPM automatic pumps, in lieu of the 500 GPM automatic pumps and 750 GPM manual pumps required by the 1968 and prior codes additional consideration should be given to testing of these pumps.

Highlights

- Highlights of 2014 Code Changes

- The commonly used method of testing through the three hose valve roof manifold may not work, particular for 150% of pump's rated flows.

- A pump test header located at or near the pump or the level of the pump or some other method of testing may be required.

Highlights

- Highlights of 2014 Code Changes

- Remember the 150 % of rated flow exception only applies to limitations in water supply and not to limitations in test facility or method.

Fire Code

NYC Fire Code

Fire Code

- NFPA 25 Inspection, Testing & Maintenance requirements have been mandated by the 2008 & 2014 Fire Code.
- W-12 Certificate of Fitness was replaced by S-12. New S-13 Certificate for Standpipe systems was created.
- System impairments must be reported to the FDNY.

Fire Code

- The 2014 Fire Code has also been enacted. Its effective date was 3-31-14.
- The new Fire Code references NFPA 25 – 2011. There are requirement changes in this standard. This 2011 standard should be reviewed by anyone performing sprinkler or standpipe system Inspection, Testing and Maintenance Services.

2014 Code Changes

- Highlights of 2014 Code Changes

- Questions and Answers